

**On two new species of Gammarids**  
**(Amphipoda, Crustacea)**  
**from Andaman and Nicobar Islands, India**

by K. Peethambaran ASARI

**Abstract.** — Two new species viz., *Victoriopisa papiae* and *Quadrivisio lobata* are described from Diglipur, Andaman and Nicobar Islands, India. Classificatory revision of the genus *Eriopisa* Stebbing as provided by G. S. KARAMAN and J. L. BARNARD is discussed.

**Résumé.** — Deux nouvelles espèces, *Victoriopisa papiae* et *Quadrivisio lobata* sont décrites de Diglipur, îles Andaman et Nicobar, Inde. La position systématique du genre *Eriopisa* Stebbing, telle qu'elle a été présentée par G. S. KARAMAN et J. L. BARNARD, est discutée.

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INTRODUCTION

The Andaman and Nicobar Islands (respectively 92°15' E and 94° E ; 6°45' N and 45' N), located in the Bay of Bengal, form an arcuate chain of 321 islands and 248 islets and rocks. They are about 850 km long, having a coast line of nearly 1 500 km. The Andaman group lies at about 901 km southeast of Calcutta (India) and at a distance of 193 km from the nearest point in Burma. The southern most Pygmalian Point of Great Nicobar is just 146 km from the Cape Pedre of Sumatra.

Knowledge on Amphipods from Andaman and Nicobar Islands is extremely scanty. The first report on the Gammarids of these islands pertains to that of TATTERSALL (1925). COINEAU and Chandrasekhara RAO (1972) made observations on the intertidal Gammarids. An attempt has therefore been made to explore the coasts of these islands, to collect and study gammarid fauna. Extensive collections were made from Diglipur (north) to Port Blair (south). These collections include about 97 species. The present paper deals with two new and interesting species with brief ecological notes.

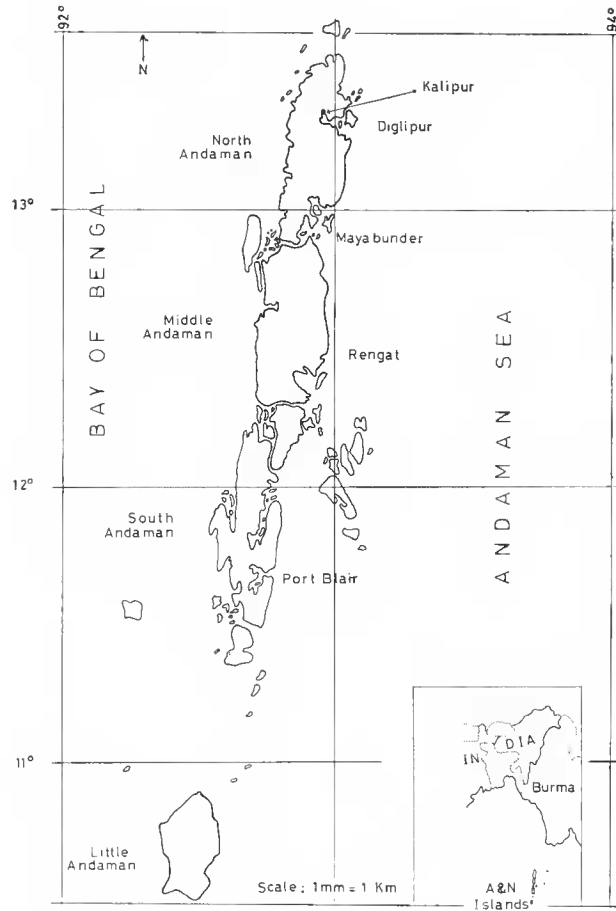


FIG. 1. — Location of Andaman Islands and type locality.

***Victoriopisa papiæ* sp. nov.**

(Fig. 2)

**MATERIAL STUDIED :** 9 male specimens ranging between 9.8-8 mm in length, from rock pool at Kalipur near Diglipur, North Andaman, Andaman Nicobar Islands, 1981, from mud samples.

**DESCRIPTION**

*Male* : Length 9.7 mm. Body rather slender. Cephalon without rostrum and subequal to the first two pereopod segments ; cephalic lobes not produced ; ocular lobes mostly blunt. Eyes medium with dark scattered ommatidia. Antenna 1 much longer than 2nd ; first peduncular article almost thrice as broad and slightly longer than 2nd ; 2nd more than thrice

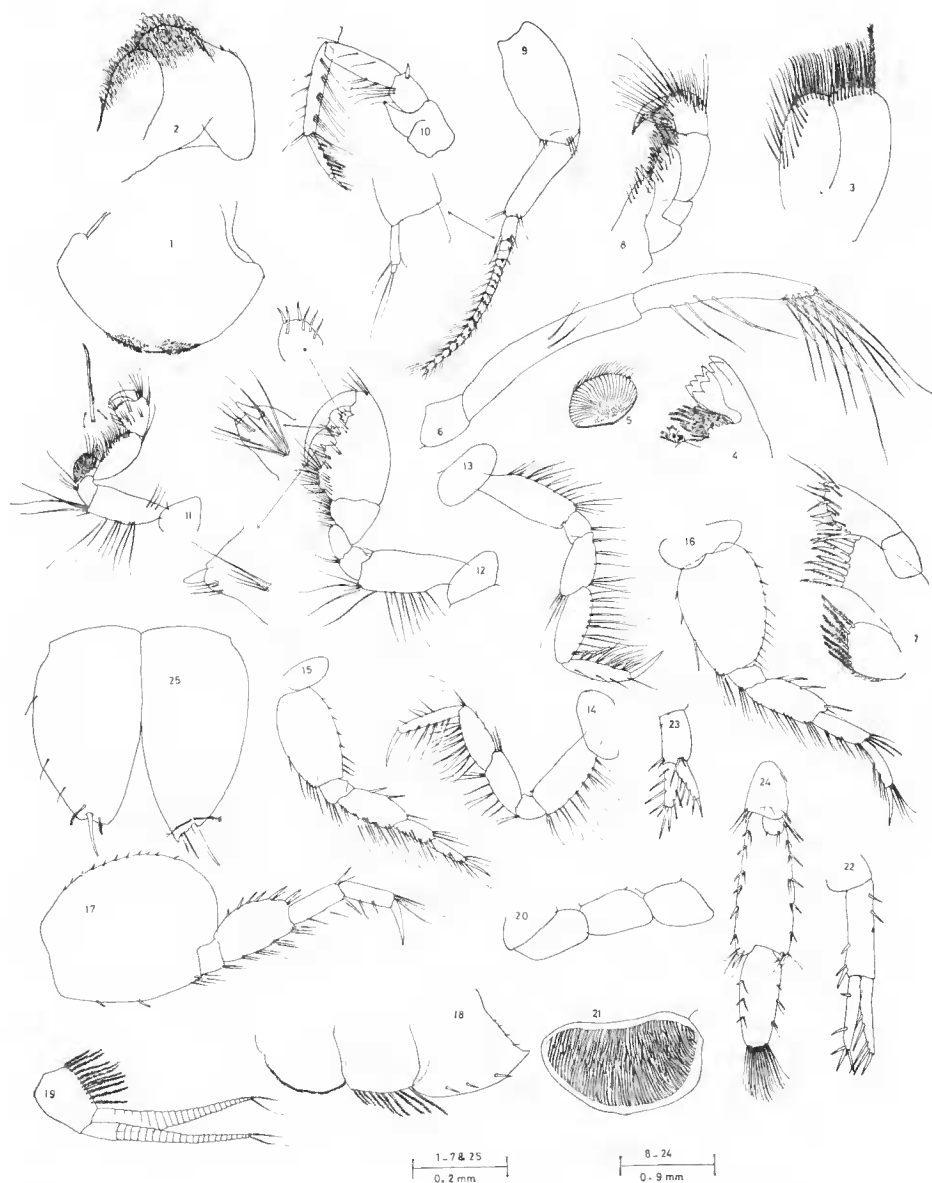


FIG. 2. — *Victoriopisa papiae* sp. nov., holotype male (length 9.7 mm) : 1, upper lip ; 2, lower lip ; 3, maxilla 2 ; 4, 5, 6, mandible ; 7, maxilla 1 ; 8, maxilliped ; 9, antenna 1 ; 10, antenna 2 ; 11, gnathopod 1 ; 12, gnathopod 2 ; 13, pereopod 3 ; 14, pereopod 4 ; 15, pereopod 5 ; 16, pereopod 6 ; 17, pereopod 7 ; 18, pleonal epimera 1-3 ; 19, pleopod 1 ; 20, coxae 1-4 ; 21, gill 2 ; 22, uropod 1 ; 23, uropod 2 ; 24, uropod 3.

as long as 3rd ; 3rd small ; accessory flagellum two segmented, 2nd article minute ; primary flagellum with 39 subsimilar, distally narrower articles which are generally setose heavily on inner margin. Antenna 2 : gland cone well developed ; 3rd peduncular article almost rectangular with one outer apical spine and few long inner apical setae ; 4th more than twice as long as 3rd and less setose ; 5th longer than 4th and bearing 4 fascicles of long inner marginal setae ; 1st flagellar article almost  $\frac{1}{2}$  as long as 5th peduncular article, setose on inner margin ; 2nd and 3rd minute, 2nd smaller than 3rd, with few setae.

Upper lip broader than long, broadest medially ; free margin subrounded and medially setulose. Mandible : incissor process 5 dentate ; lacinia mobilis toothed ; spine row with 6-7 pectinate spines ; molar large, triturative ; first peduncular article less than  $\frac{1}{4}$  as long as 2nd ; 2nd slightly longer than 3rd, with 2 medial setae ; 3rd distally narrow with 4 proximal inner marginal and few long distal apical setae. Lower lip mostly typical ; inner lobe smaller ; lobes setose. Maxilla 1 : inner plate roughly rectangular with 7 long plumose setae ; outer plate thick, bearing 7-8 strongly barbed spines ; 2nd article of palp longer than 1st with 5 terminal and few subterminal facial setae. Maxilla 2 : plates setose apically, inner distal apex of inner plate bearing marginal and median setae. Maxilliped : inner plate mildly truncate apically with 3 chisel spines and few setae ; outer plate reaching  $\frac{3}{4}$  as long as 2nd palpal article with few apical and distal inner marginal spines and submarginal setae ; 1st palpal article almost  $\frac{1}{2}$  as long as 2nd ; 3rd expanded medially, bearing long distal setae ; 4th slightly longer than 3rd, aquiline with strong pubescence.

Gnathopod 1 : Coxa mildly narrow ; basis broad distally with proximal outer submarginal and median inner marginal as well as apical setae ; merus with subspherical setulose inner border bearing long fimbriate setae distally ; carpus slightly smaller than basis, suboval with setose inner margin ; propodus distally broad, almost triangular, palm transverse with minute spinules on margin, hind margin straight ; dactylus curved, distally narrow reaching palmar angle. Gnathopod 2 : coxa oblong oval, slightly produced anteriorly ; basis subsimilar to that of 1st gnathopod except being longer ; ischium rectangular ; merus suboval ; carpus triangular and distally broad with inner marginal setae ; propodus large, longer than basis, palmar margin oblique and irregular with 3 prominences, the proximal two with spines, palm defined by a large spine, hind margin setose ; dactylus aquiline, expanded medially. Peraeopods 3 and 4 : 3rd coxa subsimilar to that of 2nd ; 4th mildly produced postero-distally, articles generally subsimilar and setose. Peraeopods 5-7 : coxae bifid ; basis expanded progressively, that of 7th much expanded and almost broadly oval, margins spinous ; merus expanded progressively ; articles generally spinous/setose. Gills suboval, flat and thin.

Pleon smooth dorsally ; 1st epimeron suboval ventrally with setulose margin ; 2nd almost rectangular, bearing 10 distally longer plumose setae ; ventral border of 3rd slightly expanded, posterior corner produced to a tooth, ventral border with 3 medium submarginal and distal border with 4 small spines. Pleopod 1 : peduncle broad with inner marginal plumose setae, coupling hooks absent.

Uropod 1 : peduncle longer than the subequal rami with 1 basofacial, 1 outer proximal, 1 distal inner marginal and 2 apical spines ; outer ramus bearing 3 inner marginal and 2 distal apical spines ; inner ramus with 2 inner marginal and 4 dissimilar apical spines. Uropod 2 : peduncle slightly longer than the longer inner ramus with an apico-median comb having 3 dissimilar spines, inner apex with 2 spines ; outer ramus smaller than inner,

bearing 3 inner marginal and 2 apical spines ; inner ramus with 2 outer marginal, 3 inner marginal and 4 apical spines. Uropod 3 longer than 1st and 2nd ; peduncle distally broad with spines at lateral apices ; outer ramus biarticulate, the proximal being longer and broader than distal, bearing fascicles of lateral submarginal and distal apical spines ; 2nd article bearing marginal spines and apical tuft of long pointed setae ; inner ramus  $\frac{1}{2}$  as long as peduncle with one inner marginal and 3 distal apical spines. Telson cleft to the base, almost as long as broad medially ; halves slightly dissimilar apically ; distal apex of right half tooth like, bearing 1 stout subapical, 2 slender apical spines ; distal apex of left half mostly blunt with 1 apical spine ; 2 subapical plumose setae present on both halves.

Female not known.

#### DISCUSSION

Generic level identification of this species has been extremely difficult, after the splitting of the genus *Eriopisa* Stebbing by G. S. KARAMAN and J. L. BARNARD (1979) to *Eriopisa* Stebbing, *Psammogammarus* S. Karaman and *Victoriopisa* G. S. Karaman and J. L. Barnard, as this species showed characters belonging to all these three genera. However, this species basically differs from *Eriopisa* and *Psammogammarus* in the basal fusion of articles of antenna 2, dilated article 4 of pereopod 7 and mostly subequal pereopods 5 and 7. The inner lobe of lower lip is not so obsolescent and also the inner plate of maxilla 2 has few oblique facial setae. The present specimens show closer relationship with *Victoriopisa* in the nature of the labrum, 1st maxilla, gnathopods, pereopods and uropods 1 and 2. But in the nature of the mandibular palp and 3rd uropod it shows affinity to *Psammogammarus*. While this species resembles *Eriopisa* in the nature of lower lip, in the nature of inner plate of 2nd maxilla it shows affinity to *Psammogammarus* and *Eriopisa*. Inner plate of maxilliped resembles those of *Victoriopisa* and *Psammogammarus* and the dactylus of maxilliped to those of *Eriopisa* and *Psammogammarus*. The 3rd uropod is more closer to that of *Psammogammarus* and the telson to those of *Victoriopisa* and *Eriopisa*. There is some amount of similarity between the present species and *Victoriopisa* (= *Eriopisa*) *chilkensis* (Chilton, 1921) in the nature of pereopods, uropods and pleonal epimera. However, in the details of peduncular articles of 1st antenna, setation of inner plate of 1st maxilla, number of plumose setae on 3rd pleonal epimeron, ornamentation of telson and also in the structure of male 2nd gnathopod, these two species are much different. *Victoriopisa papiae* sp. nov. differs from *Victoriopisa* (= *Eriopisa*) *epistomata* Griffiths, 1974, in the presence of eyes, in having smaller 1st antenna, in the non-pointed first coxa and 3rd pleonal epimeron and also in having a longer 1st article for the outer ramus of 3rd uropod. Similarly, *Victoriopisa papiae* sp. nov. differs from *Victoriopisa* (= *Eriopisa*) *australensis* Chilton, 1923, in the nature of male 2nd gnathopod, uropods and telson.

ECOLOGY : *V. papiae* was found inside small, irregular, almost horizontal tunnels made in very fine silt with plenty of litter. The salinity of the interstitial water was 31.043 ‰.

**Types :** Male holotype and 3 paratypes deposited in National collections of Zoological Survey of India.

**Name :** Refers to the collector of the specimens.

***Quadrivisio lobata* sp. nov.**

(Fig. 3)

**Material studied :** 6 males and 9 females from rock pool at Kalipur near Diglipur, North Andaman, Andaman and Nicobar Islands, 1981, from algal washings.

**DESCRIPTION**

*Male* : Length 9.00 mm. Body moderately robust. Cephalon  $2/3$  as long as first two thoracic segments ; ocular lobes bluntly produced ventro-laterally ; eyes 2 pairs, large, lateral pair slightly larger than median dorsal. Antenna 1 : longer than 2nd ; 1st peduncular article slightly smaller than 2nd, medially broad with a spine at ventro-distal apex ; 2nd as broad as 1st ; 3rd  $1/5$  as long as 1st ; accessory flagellum as long as 1st peduncular article, 8 segmented ; primary flagellum with 46 distally narrower articles. Antenna 2 : gland cone prominent extending  $1/2$  as far as 3rd peduncular article ; the latter almost twice as broad and  $1/4$  as long as 4th bearing setae on inner distal border ; 4th slightly broader than 5th with 9 fascicles of medial setae ; 5th scarcely setose ; flagellum with 29 subequal articles.

Upper lip broad medially with setose ventral border. Mandible : incisor process 6 dentate ; lacinia mobilis toothed ; spine row with 9-10 pectinate spines ; molar strong, triturative ; palpal articles successively longer distally, 2nd article with 1 medium setae on distal inner margin, apical seta of 3rd article longer than article itself. Maxilla 1 : inner plate larger, distally narrow, bearing 22 marginal plumose and 11 submarginal setae ; outer plate stout, bearing 8 barbed spines ; 2nd palpal article almost twice as long as 1st, bearing 5 apical spines and 8 facial setae. Maxilla 2 : plates subsimilar, apex of outer plate more rounded ; inner margin of inner plate with marginal and submarginal setae ; inner margin scarcely setose, apical setae of outer plate longer. Lower lip : inner lobe small, distally narrow ; outer broad ; tongue process decurrent ; margins setulose. Maxilliped : inner plate reaching 1st article of palp, distal apex bearing 3 large flat spines ; outer plate mildly curved distally, bearing 14 flat marginal spines and few inner marginal setae, 5 plumose setae present at distal outer apex ; 2nd palpal article thrice as long as 1st with almost parallel margins, inner margin setose ; 3rd twice as long as 1st, mildly expanded distally with hirsute distal inner surface ; 4th slightly smaller than 3rd, distally narrow with pectinate inner margin and distal nail.

Gnathopod 1 : coxa deep, apically rounded, the straight anterior border faintly setose, posterior border with a subapical spine ; basis more than twice as long as ischium with subparallel margins and few submarginal setae ; ischium distally broader with setose inner distal apex ; merus hirsute medially with pointed apex ; carpus narrow proximally, more than thrice as long as merus bearing fascicles of pinnate setae on inner margin ; propodus  $1/2$  as long as basis with convex outer margin bearing 6 and 5 fascicles of curved pectinate spine setae on inner margin and outer submargin respectively ; palm small,

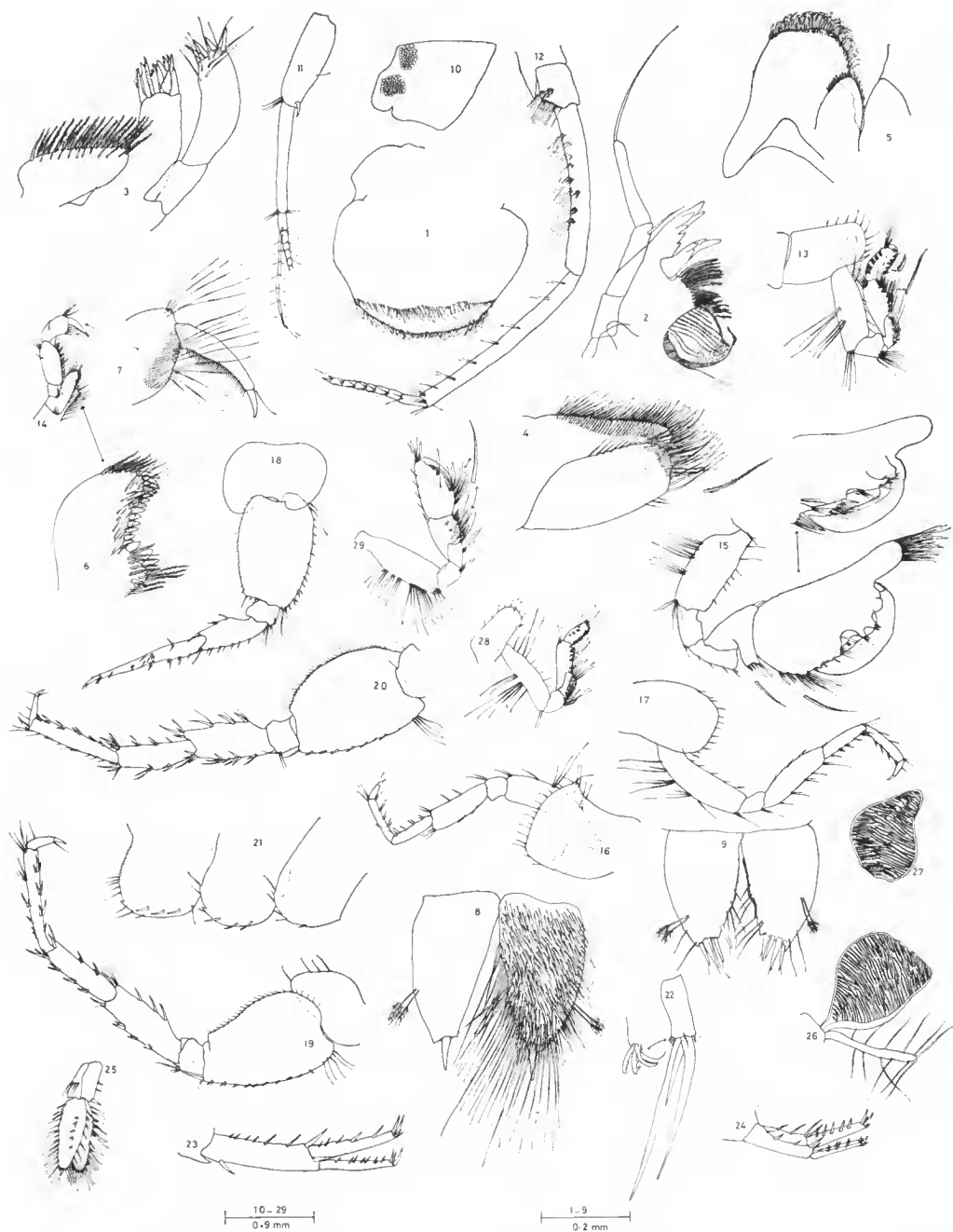


FIG. 3. — *Quadrivisio lobata* sp. nov., holotype male (length 9.00 mm) : 1, upper lip ; 2, mandible ; 3, maxilla 1 ; 4, maxilla 2 ; 5, lower lip ; 6, 7, 14, maxilliped ; 8, telson ; 9, telson (female) ; 10, cephalon ; 11, antenna 1 ; 12, antenna 2 ; 13, gnathopod 1 ; 15, gnathopod 2 ; 16, peraeopod 3 ; 17, peraeopod 4 ; 18, peraeopod 5 ; 19, peraeopod 6 ; 20, peraeopod 7 ; 21, epimera 1-3 ; 22, pleopod 1 ; 23, uropod 1 ; 24, uropod 2 ; 25, uropod 3 ; 26, gill and oostigite (female) ; 27, gill ; 28, gnathopod 1 (female) ; 29, gnathopod 2 (female).

transverse ; dactylus curved reaching palmar apex. Gnathopod 2 much larger and massive than 1st ; coxa broader with softly rounded free margin ; basis with straight outer margin, inner margin with 4 fascicles of long setae ; ischium and merus scarcely setose ; carpus triangular with produced inner distal apex bearing pinnate setae, outer distal apex with a spine ; propodus large, outer distal apex produced to a blunt apically setose process ; palm oblique, irregular with few spines, outer and inner margins with 2 apically setose processes each and defined by 2 subequal submarginal spines, hind margin smaller than palm with 4 fascicles of distally longer pinnate setae ; dactylus thick, curved, pointed, reaching palmar angle. Peraeopods 3 and 4 subsimilar ; coxa of 3rd subsimilar to that of 2nd gnathopod, that of 4th broader with toothed inner distal apex ; articles generally longer, distally narrow ; inner margin of carpus and propodus with few spines ; dactylus toothed. Peraeopod 5 : coxa bifid ; basis suboval with crenulate, setose inner border, outer margin spinulose ; distal articles narrow distally, margins spinous. Peraeopods 6 and 7 mostly subsimilar except the basis of 7th being more broader ; articles generally spinous. Gills flat and thin, distally narrow.

Pleon : terga generally smooth except for few setae especially on 3rd tergum ; epimera 1-3 with softly rounded and scarcely setose postero-ventral margins ; ventral border of 2nd and 3rd carrying 3 submarginal spines each, distal apices toothed. Pleopod 1 : peduncle thrice as long as the longer inner ramus ; inner distal apex of peduncle with 3 hooked spines. Urosome thoroughly pubescent. Uropod 1 : peduncle longer and almost thrice as broad as the longer outer ramus bearing a stout outer marginal spine, inner margin with distally longer spines, the largest being the inner apical, interramal spine large ; outer ramus with 8-9 inner submarginal and 3 stout apical spines ; inner ramus with 5 distally larger spines, apex bearing 5 dissimilar spines. Uropod 2 : peduncle as long as the longer inner ramus bearing 2 inner marginal and 3 median spines, inner and median distal apices spinous ; outer ramus with 3 pairs of inner submarginal and 4 apical spines ; inner ramus bearing 5 inner submarginal and 4 dissimilar apical spines. Uropod 3 : peduncle subrectangular with 4 median transverse and 3 inner marginal spines ; rami foliaceous and subsimilar in length, outer slightly broader than inner ; margins and apices with spines and setae. Telson : cleft to the base ; right half slightly broader than left medially ; apices narrow bearing one spine each ; surface profusely setose, distal setae being very long, paired plumose setae present on outer margins.

*Female* : Length 7.8 mm. The females differ from males mainly in the structure of the 2nd gnathopod and telson. The female 2nd gnathopod is characterised by its smaller size and perfectly oblique palm. The apical finger shaped setose lobe of male propodus is absent ; basis more setose on inner margin ; carpus with subspherical setose inner margin. Telson non-pubescent dorsally, inner distal margins and apices setose ; distal apex of right half slightly broader than left with 4 spines ; distal apex of left half with 3 apical and 1 inner subapical spines.

#### DISCUSSION

G. S. KARAMAN and J. L. BARNARD (1979) assigned *Quadrivisio bengalensis* Stebbing as described by BOUSFIELD (1971) a new specific status (*Quadrivisio bousfieldi*), based



mainly on the presence of supernumerary teeth on the pleonal epimera and absence of setae on the mandibular palpar articles. *Quadrivisio lobata* sp. nov. resembles *Q. bengalensis*, in its general appearance, in the absence of well formed supernumerary teeth on the epimera as well as in the presence of setae on the mandibular palpar articles, as per the key provided by KARAMAN and BARNARD (1979) ; but differs from the same in the nature of male telson and 2nd gnathopod. Similarly this new species differs from *Q. aviceps* K. H. Barnard, 1940, in having a much shorter accessory flagellum and non-dilated male 1st gnathopod. *Q. lutzi* (Shoemaker, 1933) is different from the present material in the latter having a longer accessory flagellum and distally non-tapering male 1st gnathopod. The present species can be easily distinguished from all other known species of the genus by the characteristic setose lobe on the propodus of male 2nd gnathopod and also by the profusely setose male telson.

ECOLOGY : All specimens were found associated with partially decayed algal material in a very shallow rock pool. The salinity of water was 30.097 ‰.

TYPES : Male holotype, 2 males and 2 females paratypes deposited in National collections of Zoological Survey of India.

NAME : Pertains to the characteristic setose lobe on propodus of male 2nd gnathopod.

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